Kreating Kaverns of KFest

By Kay Savetz

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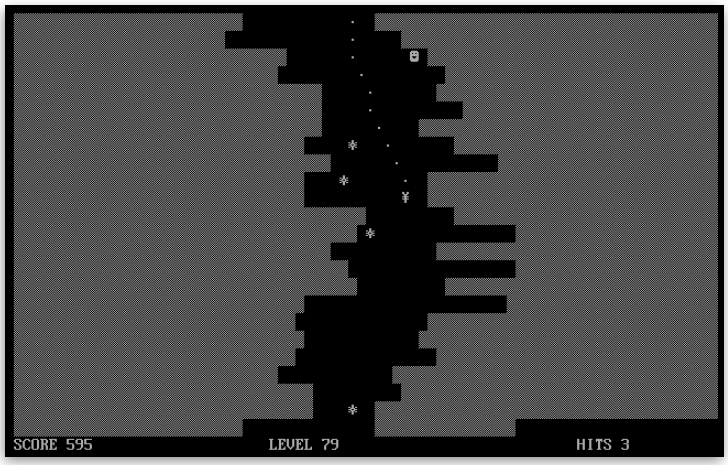
My game Kaverns of KFest won first prize in the "HackFest" at KansasFest 2016. This is a post-mortem about the creation of that program.

I stuffed my copy of *Assembly Lines: The Complete Book* in my bag at the last minute, unsure if the extra weight would be worth the trouble. Sure, writing a game in assembly language would make for an interesting HackFest project, but it seemed like a long shot to squeeze that into an already jam-packed KansasFest week. The book went in.

HackFest is one of my favorite parts of KansasFest, and I went in with two ideas. The first, to create a Twitter bot that would tweet Apple II screenshots, was too easy, and complete by end of the day Tuesday.

The bigger idea was to write an assembly-language, Apple II-version of Pitfall, a simple 1984 DOS obstacle avoidance game (not the similarly named Activision classic.) Over the years, I had dabbled with assembly language on the Atari 800 and Apple II but had never written more than the simplest of programs.

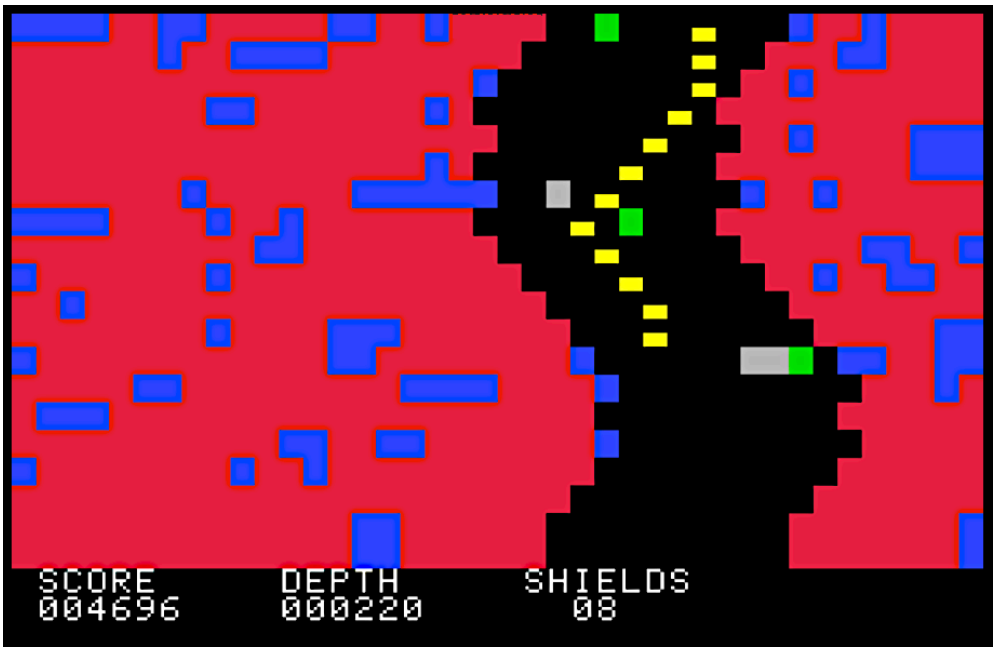


The DOS game Pitfall

Despite the constant distraction of being surrounded by interesting presentations and people, I found KansasFest a great environment for me to do a project like this, if only for having ready access to a swarm of experts. In line for lunch, I asked "Burger" Becky Heineman about the best way to handle writing to the computer's non-contiguous screen RAM. "Just use a table," she said. Turns out that a table — my guess at a solution because I didn't know the right way—is the way approved by the masters.

Being at KansasFest also provided an endless supply of playtesters and idea-generators. When Jason Scott saw the game's stark, one-color-per-level walls, he suggested they slowly change color from one level to the next, a feature I implemented

with just a few bytes of code. Someone else told me about the Merlin assembler's full-screen editor (I had been using the line editor). Someone else taught me the basic editing functions. Someone else handed me the Merlin manual on a USB stick. What an amazing community.



Kaverns of KFest (final version, with score display)

As the HackFest deadline loomed, I had a game that was working and completely playable. Its biggest problem was that, while it kept score, I didn't know how to display that score. Between presentations, John Brooks patiently explained how to change hex numbers to binary-coded decimal for easier output, and while I more or less understood the concept, I didn't feel like I could get it done before the deadline. Mostly, I was mentally exhausted from three days of thinking about assembly language and staying up late; I worried that my fatigue would cause me to screw up the working code I'd done so far. I had backups, but I didn't want to test them.

I showed the judges a game that was working, playable, and fun— but without a score display. Once I was back home and with a couple of good nights of sleep, I found a nice bit of hex-to-BCD (binary-coded decimal) conversion code online and melded it into my program. Next, I'll try porting the game to run on Atari 8-bit computers.

Play Kaverns of KFest online at https://archive.org/details/Kaverns_of_Kfest_1.1 or download the code from https://github.com/savetz/Kaverns.

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